

L 39723-65 EWT(1)/EPA(s)-2/EWT(m)/EWA(a)/T/EWP(t)/EPA(bb)-2/EWP(z)/EWP(b)
 ACCESSION NR: AP5004265 Pt-10/Pi-4 IJP(c) MJW/5/0126/65/019/001/0052/0056
 JD/GG

AUTHOR: Telesnin, R. V.; Kolotov, O. S.; Pogozhev, V. A.

TITLE: On alternating magnetization of thin permalloy films in the presence of a constant field perpendicular to the axis of magnetic susceptibility

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 1, 1965, 52-56

TOPIC TAGS: magnetic thin film, computer memory, hysteresis, magnetic anisotropy, permalloy, Kerr cell, switching circuit

ABSTRACT: The authors study the effect of a transverse field on dynamic processes in thin dynamic films. A stroboscopic oscillograph with an inherent buildup time of 0.3 nanoseconds was used, which permitted a transition to a study of more rapid magnetic reversal processes. It is found that the curve for magnetic reversal time as a function of the field strength is made up in the general case of three sections which are sharply distinct from one another. The peculiarities of this curve are compared with the dispersion of anisotropy in the films and also with the form of the transverse signal. The film specimens were obtained by thermal vaporization of permalloy 79NMA. The experimental results which are obtained indicate that the dispersion of anisotropy determines the effect which a transverse field has on

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L 39723-65

ACCESSION NR: AP5004265

pulse processes in thin magnetic films. Orig. art. has: 6 figures, 1 table.

ASSOCIATION: Moskovskiy gosuniversitet im. N. V. Lomonosova (Moscow State University)

SUBMITTED: 17Mar64

ENCL: 00

SUB CODE: EM, DP

NO REF SOV: 007

OTHER: 007

Card 2/2

ACC NR: AP6013518

UR/G120/66/000/002/G156/0158

AUTHOR: Kolotov, O.S.; Pogozhev, V.A.

ORG: Department of Physics, MGU (Fizicheskiy fakultet MGU)

TITLE: Strip line for the exploration of pulsed remagnetization of thin permalloy films

SOURCE: Priory i tekhnika eksperimenta, no, 2, 1966, 156-158

TOPIC TAGS: magnetic film, magnetic film research instrument, magnetic property, magnetic alloy property, strip line magnetometer

ABSTRACT: This paper describes an improved strip line instrument for the exploration of pulsed remagnetization of thin permalloy films. The purpose is to enable easy handling of samples, to decrease spurious signals and to study the influence of the intrinsic film axes angle with the field upon remagnetization time. With reference to Fig. 1, depicting the system less its Helmholtz coils effecting the return magnetization pulse, improvements include - a rectangular sensing turn I with alignment means, and an auxiliary turn, II, for the compensation of spurious signals, connected to the output coaxial cable. Furthermore, a is the insertion opening for the circular permalloy film sample, in the plexiglass plate 5 placed between the upper, 1, and the lower, 2, strips. 1 is removable for sample insertion. Spacer 3 is an insulator, spacer 4 is of brass. The system is mounted on plexiglass base 6 and is pulsed from the coaxial cable

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UDC: 621.317.799:539.216.22:621.318.1

ACC NR: AP6013518

7, on the reflection principle, doubling the field amplitude. The line of easy magnetization is drawn on the sample during deposition, and its orientation angle with respect to the field is read against scale A on plate 5. Tests show that the strip line can be used for the study of remagnetization processes with a duration down to 1 nsec.

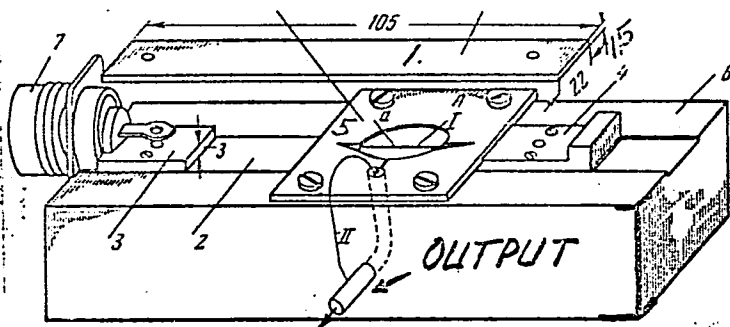


Fig. 1. Schematic of the strip line system

Authors thank R.V. Telesnin for his interest in this work. Orig.art. has 3 figures.

SUB CODE: 11,09,20 / SUBM DATE: 25May65 / ORIG REF: 004 / OTH REF: 003

Card 2/2

S/120/65/000/001/046/072
E192/E382

AUTHORS: Kolotov, O.S. and Pogoshev, V.A.

TITLE: A source of short pulses for investigating wideband radio circuits

PERIODICAL: Pribery i tekhnika eksperimenta, no. 1, 1963, 164 - 165

TEXT: The circuit diagram of the pulse-generator is shown in Fig. 1. In this the pulses are obtained by successively limiting the pulse generated in the first secondary-emission tube (see the figure). The generator operates as a grounded-grid circuit and can be triggered by a negative pulse applied to the grid of the first tube. The output pulse of the second tube has a rise time of less than 5 mps. This is amplitude-limited by the third tube and its rise time is reduced to about 2 mps. At the output of the fourth tube, which also operates as a limiter, the rise time does not exceed 0.8 mps. The parameters of the pulses so generated are comparable with those obtained by means of a mercury switch, having the additional advantage of high repetition rates (if required). The circuit can therefore be used as a

Card 1/2

A source of

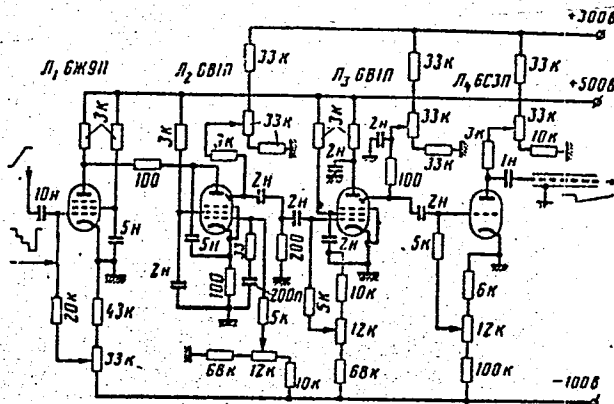
S/120/63/000/001/046/072
E192/E382

convenient source of short pulses suitable for the investigation of various wideband electronic devices. There are 2 figures.

ASSOCIATION: Fizicheskii fakul'tet MGU (Physics Department of MGU)

SUBMITTED: February 17, 1962

Fig. 1:



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L 50930-65 EWT(1)/T/EEC(b)-2 P1-4 IJP(c) GG

ACCESSION NR: AP5011426

UR/0048/65/029/004/0546/0547

AUTHOR: Telesnin, R.V.; Kolotov, O.S.; Pogozhev, V.A.

30
B

TITLE: Investigation of the conditions of transition from nonuniform to uniform rotation in switching of thin Permalloy films. Report, Second All-Union Symposium on the Physics of Thin Ferromagnetic Films held in Irkutsk, 10-15 July 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 4, 1965, 546-547

TOPIC TAGS: ferromagnetic thin film, magnetization, permalloy

ABSTRACT: It has generally been assumed that the break in the plots of the inverse switching time τ^{-1} versus the driving field (equal to the applied switching field H_s plus the transverse static field H_1) corresponds to transition from non-uniform to uniform rotation in the process of magnetization reversal of thin ferromagnetic films. In experiments performed by the authors it was found that this transition may occur when $H_1 < H_k \sin \alpha_{\max}$, where H_k is the anisotropy field and α_{\max} is the maximum angular dispersion of the film. To clarify the nature of the processes that occur in switching of films in fields $H_1 > C/H_k$ (C is a constant that depends on the properties of the film. Specifically on the dispersion of the

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L 50980-65

ACCESSION NR: AP5011426

anisotropy), there was investigated the signal induced in transverse recording of the loop in the plane containing the easy direction. The resultant curves for one film are shown in Enclosure 01. The curves show that the character of the increase in flux with increase of the transverse field changes at certain values of H_1 ; the breaks occur at the same values of the transverse field as the breaks in the $\tau_2^{-1} = f(H_1)$ plots and, accordingly, in the $\tau^{-1} = f(H_2 H_1)$ plots. This is taken as evidence that the magnetization vectors in the individual domains rotate in different directions, so that the corresponding fluxes compensate each other. It is inferred, therefore, that what has earlier been assumed to be a transition from nonuniform to uniform rotation is actually a transition from non-unidirectional rotation to unidirectional rotation and that this transition is realized under the simultaneous action of the fields H_2 and H_1 . This obtains at any rate for values of the transverse field H_1 for which the angle of rotation of the total vector of magnetization of the film is comparable with the angular dispersion of the film. Orig. art. has: 1 formula and 1 figure.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 01

SUB CODE: EC, EN

NR REF SCV: 003

OTHER: 004

Card 2/3

L 32778-66 EWP(k)/EWP(e)/EWP(t)/BTI LSP(c) JD/HW

ACC NR: AP6012798

SOURCE CODE: GE/0030/66/014/002/0371/0380

AUTHOR: Telesnin, R. V.; Ilicheva, E. N.; Kolotov, O. S.;
Nikitina, T. N.; Pogozhev, V. A.

ORG: Faculty of Physics, University of Moscow

TITLE: Experimental investigation of some features of incoherent rotation in thin permalloy films [Contribution to the International Colloquium on Magnetic Thin Films held from 25 to 28 April 1966 in Jena]

SOURCE: Physica status solidi, v. 14, no. 2, 1966, 371-380

TOPIC TAGS: permalloy, metal film, incoherent rotation,
magnetic domain structure, magnetic thin film

ABSTRACT: Some features of the mechanism of nonhomogeneous rotation in thin permalloy films reversed by pulse fields are investigated: switching coefficient, threshold fields, and parameters of transition to fast magnetic reversal. The behavior of the films is also investigated for fields applied along the "hard" axis. The results are compared with the static parameters of thin films: anisotropy field,

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L 32778-66

ACC NR: AP6012798

angular dispersion, and domain structure. Orig. art. has: 12 figures
and 1 table. [Author's abstract] [KS]

SUB CODE: 20/ SUBM DATE: 18Jan66/ ORIG REF: 009/ SOV REF: 004/
OTH REF: 008/

Card 2/2 JS

L 38532-66 EWT(1)/EWT(m)/T/EWP(t)/ETI LJP(c) JD/GG/GD

ACC NR: AP6007362

SOURCE CODE: UR/0126/66/021/002/0316/0317

AUTHORS: Talesnin, R. V.; Kolotov, O. S.; Pogozhev, V. A.

73
B

ORG: Moscow State University in M. V. Lomonosov (Moskovskiy gosuniversitet)

TITLE: Magnetic reversal of thin permalloy films at small angles with respect to the axis of easy magnetization

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 2, 1966, 316-317

TOPIC TAGS: magnetic thin film, transverse magnetic field, magnetic property, magnetic field measurement, magnetic anisotropy, permalloy/79Mn permalloy

ABSTRACT: The effect of the angle α between the permalloy film and the axis of easy magnetization on the angular dispersion of anisotropy has been studied on a film obtained by thermal plating with 79Mn permalloy. The parameters of the film were: anisotropic field $H_k = 2.8$ oe, $\alpha_{max} = 12 \pm 2^\circ$. The results are summarized in Fig. 2 and are compared with those produced when transverse field H_t is the variable. The latter, which is also presented, was discussed in a previous work by R. V. Talesnin, O. S. Kolotov, and V. A. Pogozhev (Izv. AN SSSR, ser. fiz., 1965, 29, No. 4, 516). It was established that the two variables (the inclination angle and the transverse field) are analogous in their effects in that during magnetic reversal the conversion of multidirectional to unidirectional rotation occurs following the same rules for

Card 1/2

REF: 530-216-2522.23

KOLOTOV, O.S.; POGOZHEV, V.A.

Source of short pulses for the tuning of quick-acting electronic circuits. Prib. i tekhn. eksp. 8 no.1:164-165 Ja-P '63.

(MIRA 16:5)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta.
(Electric circuits) (Oscillators, Electron tube)

ACCESSION NR: AP4006826

S/0120/63/000/006/0098/0102

AUTHOR: Kolotov, O. S.; Pogozev, V. A.

TITLE: Transfer characteristic meter for the investigation of rapid physical processes

SOURCE: Priory* i tekhnika eksperimenta, no. 6, 1963, 98-102

TOPIC TAGS: transfer characteristic recording, transfer characteristic measurement, transfer characteristic

ABSTRACT: An instrument for measuring transient (or transfer) characteristics of various devices, such as ferromagnetics, pulse-duty-operating tubes, semi-conductors, and spark gaps, is described. It consists of the following units (see Enclosure 1): a steep-pulse generator capable of producing 2-nanosec, 25-amp or 0.8-nanosec, 30-v pulses; a master oscillator (a blocking generator) with a 180-v, 70-nanosec-front pulse; a voltage generator that develops 150-v,

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ACCESSION NR: AP4006826

5-nanosec-front pulses with flat tops; a pulse-modulated 6S21D-tube time marker that produces 0.5, 2, 10, and 25-nanosec marks; a supply generator that feeds 600-nanosec, 600-v pulses to the amplifier. A laboratory hookup was tested with two picture tubes: 13LO101M and 13LO3I. "The authors wish to thank R. V. Telesnin for his constant interest in the work and his valuable critical comments." Orig. art. has: 4 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 24Dec62

DATE ACQ: 24Jan64

ENCL: 01

SUB CODE: SD

NO REF SOV: 004

OTHER: 000

Card 2/2

KOLOTOV, O.S.; POGOZHEV, V.A.

Method of studying the dynamic properties of thin magnetic films
in the nanosecond range. Izv. AN SSSR. Ser. fiz. 29 no.4:538-542 Ap
'65.
(MIRA 18:5)

L 15419-66 EWT(m)/EWP(a)/EWA(d)/EWP(t)/EWP(z)/EWP(b) MJW/JD
ACC NR: AP6004482

UR/0048/66/030/001/0108/0111

AUTHOR: Telesnin, R.V.; Kolotov, O.S.; Nikitina, T.N.; Pogozhev, V.A.

ORG: Physics Department, Moscow State University im. M.V. Lomonosov (Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta)

TITLE: Investigation of nonuniform rotation processes in thin Permalloy films / Transactions of the Second All-Union Symposium on the Physics of Thin Ferromagnetic Films held at Irkutsk 10 July to 15 July, 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 1, 1966, 108-111

TOPIC TAGS: ferromagnetic film, magnetic thin film, permalloy, magnetic domain structure, magnetic coercive force, magnetic anisotropy, pulsed magnetic field

ABSTRACT: The anisotropy and threshold fields of a number of 79NMA Permalloy films of thickness from 470 to 2800 Å were measured and are compared. The threshold fields were obtained by extrapolation of the linear portion of the curve giving the inverse switching time along the easy axis as a function of the switching field, and the anisotropy fields were determined from hysteresis loops or with a ferromagnetic resonance apparatus. The investigated films fell into two categories: those which were left with a fine domain structure when a strong field along the hard axis was suddenly removed, and those which, under the same conditions broke up into a few large domains. The threshold fields of the films with the fine domain structure were considerably

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L 15419-66

ACC NR: AP6004482

stronger than the anisotropy fields; the threshold and anisotropy fields of the films with coarse domain structure were approximately equal. It is concluded that the increase in the threshold field in the films with fine domain structure is due to magnetostatic interactions. In order to observe the decay of magnetization following sudden removal of a saturating field along the hard axis the films were subjected to two successive magnetizing pulses with an adjustable delay between them, the increase of the longitudinal flux in the film on the rise of the second pulse was recorded. This flux increase divided by the saturation flux is the relative amount by which the magnetization has decreased during the delay between the pulses. The demagnetization was found to take place in three stages: a rapid initial stage, and intermediate stage lasting for 100 to 500 nanosec, and a slow stage lasting for several hundred μ sec. In the films with coarse domain structure the process was essentially completed in the intermediate stage. In the films with fine domain structure only 1-2% of the magnetization was lost in the initial rapid stage and the slow stage was well developed. Possible reasons for this behavior are discussed. Orig. art. has: 2 figures and 1 table.

SUB CODE: 20

SUBM DATE: 00

ORIG REF: 004

OTH REF: 006

TS
Card 2/2

TELESNIN, R.V.; KOLOTOV, O.S.; POGOREV, V.A.

Conditions for the change over from nonuniform to uniform rotation in the magnetic reversal of thin Permalloy films. Izv. AN SSSR. Ser. fiz. 29 no.4:546-547 Ap '65. (MIRA 18:5)

BORISOV, Yuriy Nikitovich; ~~POGOZHEV, Vladimir Aleksanyevich~~; SAVENKO,
Vitaliy Aleksandrovich; ~~SMAGORINSKIY~~, B.S., red.; IZHBOLEINA,
S.I., tekhn. red.

[Ceramics cut metals]Keramika rezhmet metall. Stalingrad, Sta-
lingradskoe knizhnoe izd-vo, 1961. 32 p. (MIRA 15:11)
(Metal cutting tools) (Ceramic metals)

3h22h

S/181/62/004/002/007/05
B102/B138

24.2200 (1147,1137,1164)

AUTHORS: Telesnin, R. V., Al'meneva, D. V., and Pogozhev, V. A.

TITLE: Study of the temperature dependence of certain magnetic properties of gadolinium

PERIODICAL: Fizika tverdogo tela, v. 4, no. 2, 1962, 357-360

TEXT: The temperature dependences of magnetic viscosity, coercive force, magnetic susceptibility, magnetization and residual induction were measured between 78 and 300°K for two toroidal specimens of metallic 99.9 % pure gadolinium. The dimensions were: d=11 mm, D=19 mm, h= 5 mm. and d=20.1 mm, D=30.5 mm, h=10.4 mm. A ballistic apparatus with fields up to 200 oe was used for the measurements. $\chi(H)$ was determined at fields of up to 1.5 oe. At low temperatures the function was linear but the slope varied with temperature, the maximum being at 210°K, at which the $H_c(T)$ curve has a minimum. After this coercive force increases rapidly, reaching a maximum before Curie point, and then falling sharply again. The temperature dependence of specific magnetization, determined between

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KOLOTOV, O.S.; POGOZHEV, V.A.

Transient response meter for studying fast physical processes.
Prib. i tekhn. eksp. 8 no.6:98-102 N-D '63. (MIRA 17:6)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta.

ACC NR: AP 7001320

SOURCE CODE: UR/0057/66/036/012/2206/2207

AUTHOR: Kolotov, O.S.; Pogochev, V.A.

ORG: Physics Department, Moscow State University im. M.V. Lomonosov (Moskovskiy gosudarstvennyy universitet Fizicheskii fakul'tet)

TITLE: Investigation of the time stability of a low voltage spark-type pulse sharpener

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 12, 1966, 2206-2207

TOPIC TAGS: nanosecond pulse, pulse shaper, spark gap

ABSTRACT: The authors have investigated the stability of the breakdown time of air gaps at atmospheric pressure between 6 mm long 0.2 mm diameter crossed platinum wires in order to explore the possibility of employing such gaps as pulse sharpeners to obtain low voltage (~ 1 kV) nanosecond pulses. The rise time of the primary pulses was 6 nanosec. The scatter of the breakdown time depended strongly on both the primary pulse height and the repetition rate. With 1.2 kV primary pulses the breakdown time scatter was several nanoseconds at repetition rates below 200 Hz, about 0.2 nanosec at 600 Hz, and less than 0.2 nanosec at 2 kHz. The reduction in the scatter with increasing repetition rate is ascribed to the presence in the gap at the higher rates of unrecombined ions and electrons. At a repetition rate of 1.5 kHz the rise time of the sharpened pulse was between 0.5 and 0.7 nanosec for all primary pulse heights

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UDC: 537.523.4

ACC NR: AP 7001320

above 500 V. The scatter in the breakdown time exceeded 1 nanosec for 500 V primary pulses but was only 0.25 nanosec for approximately 1.3 kV primary pulses. It is concluded that the gap can be employed to shape approximately 1 kV nanosecond pulses at repetition rates of the order of 1 kHz. The authors thank Professor R.V. Telesin for his interest in the work. Orig. art. has: 3 figures.

SUB CODE: 20

SJBM DATE: 05Dec65

ORIG. REF: 005

OTH REF:

Card 2/2

POGOZHEVA, L. N.

Tissue therapy in strictures of the urethra. Khirurgiia, Moskva.
No. 6, June 50. p. 75-7

1. Of the Urological Clinic (Director--Active Member Academy of
Medical Sciences USSR Prof. R. M. Fronshteyn, deceased), First Moscow
order of Lenin Medical Institute.

GLML 19, 5, Nov., 1950

POGOZHEVA, L.N.

Sulfanilylurea in the control of urinary infections. Sovet.med. No.
3:23-24 Mar 51. (CLML 20:6)

1. Of the Urological Clinic (Director--Active Member of the Academy
of Medical Sciences USSR Prof. R.M.Fronshteyn, deceased), First Mos-
cow Medical Institute.

POGOZHEVA, L.N.; TSYPKIN, I.S.

Significance of microscopic examination of urine in the diagnosis of
bladder neoplasms. Urologiia, 22 no.1:27-31 Ja-F '57
(MLRA 10:5)

1. Iz urologicheskoy kliniki (zaveduyushchiy-professor A.P. Frumkin)
TSentral'nogo instituta usovershenstvovaniya vrachey i laboratorii
bol'nitsy imeni S.P. Botkina (zaveduyushchiy-professor Ye.A. Kost)
 (BLADDER, neoplasms
 diag., cytol. exam. of urine)
 (URINE
 cytol. exam. in diag. of bladder cancer)

POGOZHEVA, L.N., kand.med.nauk

Adrenal syndrome. Urologiia 23 no.2:23-25 Mr-Apr '58. (MIRA 11:4)

1. Iz kafedry urologii (zav. - zasluzhennyy deyatel' nauki prof. A.P.Frumkin) Tsentral'nogo instituta usovershenstvovaniya vrachey i urologicheskogo otdeleniya bol'nitsy imeni S.P.Botkina (glavnyy vrach - prof. A.H.Shabanov)
(PHEOCHROMOCYTOMA, case reports
(Rus))

POGOZHEVA, L.N.

Treatment of tumors of the urinary bladder with radioactive isotopes combined with surgery. Trudy TSIU 62:278-290 '63.

(MIRA 18:3)

1. Kafedra urologii (zav. zasluzhennyy deyatel' nauki prof. A.P. Frumkin [deceased]) Tsentral'nogo instituta usovershenstvovaniya vrachev.

POGOZHEVA, L.N.

X-ray determination of the depth of penetration of an epithelial tumor of the urinary bladder. Vest. rent. i rad. 36 no. 6:64-65
N-D '61. (MIRA 15:2)

1. Iz urologicheskoy kliniki (zav. - zasluzhennyy deyatel' nauki prof. A.P.Frumkin) Tsentral'nogo instituta usovershenstvovaniya vrachey, na baze bol'nitsy imeni S.P.Botkina (glavnyy vrach - prof. A.N.Shabanov).

(BLADDER_TUMORS)

POGOZHEVA, L.N., kand. med. nauk (Moskva)

Treatment of tumors of the urinary bladder with radioactive isotopes combined with surgical intervention. Urologia 28 no.5:44-48 S-0'63 (MIRA 17:4)

1. Iz urologicheskoy kliniki (zav. -- prof. A.P. Frumkin [deceased]) TSentral'nogo instituta usovershenstvovaniya vrachey i urologicheskogo otdeleniya Bol'nitsy imeni Botkina.

BYCHKOV, Vasilii Pavlovich; POGOZHEV, S.A., prof., otv.red.; GONCHAROVA,
I.V., red.izd-va; BOBROV, P.G., tekhn.red.

[Automatic controllers and the theory of automatic control;
elements of automatic control systems] Teoriia avtomaticheskogo
regulirovaniia i reguliatory; elementy sistem avtomaticheskogo
regulirovaniia. Lektsiia vtoraiia. Moskva, 1958. 53 p.
(Automatic control) (MIRA 12:3)

POGOZOV, A.G., inzhener; MEYEVIN, Ye.A., inzhener; AFANAS'YEV,
Arched warehouse made of prestressed reinforced elements. Stroi.prom-
34 no.6:41-44 Je '56. (MLRA 9:9)
(Czechoslovakia--Precast concrete construction)

POGPSOV, A.

Concrete Construction

Industrial methods of construction the Smolensk Square skyscraper., Mekh.trud.rab.,
6, No. 1, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1952 ~~1958~~, Uncl.

POGRACZ, S.

TECHNOLOGY

Periodical: MAGYAR TEXTILTECHNIKA Vol. 11 no. 1, Jan. 1959

POGRACZ, S. Performance test of the drying apparatus. p. 35.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, No. 5,
May 1959, Unclass.

POGRANITSKAYA, YE. G.

Science

Acquainting children with nature, Moskva, Uchpedgiz, 1951.

9. Monthly List of Russian Accessions, Library of Congress, December 1951/2 Unclassified.

POGREB, V.I., inzh.

Distribution of temperature and stresses in a layer of rock under the effect of a high temperature gas jet. Izv.vys.ucheb.zav.;gor. zhur. 6 no.11:97-101 '63. (MIRA 17:4)

1. Kazakhskiy politekhnicheskii institut. Rekomendovana kafedroy razrabotki rudnykh mestorozhdeniy.

BRICHKIN, A.V., prof.; POGREB, V.I., inzh.

Temperature aftereffects following jet piercing. Izv.vys.
ucheb. zav.; gor. zhur. 7 no.3:89-95 *64 (MIRA 17:8)

1. Kazakhskiy politekhnicheskiy institut. Rekomendovana kafed-
roy razrabotki rudnykh mestorozhdeniy i laboratoriyey novykh
metodov razrusheniya porod. 2. Chlen-korrespondent AN KazSSR
(for Brichkin).

BRICHKIN, A.V., prof.; POGREB, V.I., inzh.; GENBACH, A.N., inzh.

Optimal angle of incidence of a gas jet with the stope surface
during jet piercing. Izv. vys. ucheb. zav.; gor. zhur. 6 no.
12:88-92 '63. (MIRA 17:5)

1. Kazakhskiy politekhnicheskii institut. Rekomendovana kafedroy
razrabotki rudnykh mestorozhdeniy.

BRICHKIN, A.V.; POGREB, V.I.; SHNAPIR, Ya.I.

Theoretical evaluation of the nature of the stresses, deformations,
and heat transfer conditions in a rock in the presence of forced
heat flows. Trudy VNIIBT no.10:136-147 '63. (MIRA 17:4)

BRICHKIN, A.V., prof., FOGREB, V.I., inzh.; GENBACH, A.N., inzh.

Mechanism of rock breaking under the action of a high-temperature
and high-speed gas jet. Izv.vys.ucheb.zav.;gor.zhur. 7 no.7:80-85
'64. (MIRA 17:10)

1. Kazakhskiy politekhnicheskii institut. Rekomendovana kafedroy
razrabotki rudnykh mestorozhdeniy.

ERICHKIN, A.V., prof; POGREB, V.I., inzh.

Field of temperature set up in thermal drilling. Izv. vys.
ucheb. zav.; gor. zhur. 6 no.6:76-83 '63. (MIRA 16:8)

1. Kazakhskiy politekhnicheskoy institut. Rekomendovana rafedroy
razrabotki rudnykh mestorozhdeniy.
(Boring)

POGREBAT'KO, Ye.

Contest for equipment to establish technical work norms.

Biul.nauch.inform.trud i zar.plata no.1:45-47 '59.

(MIRA 12:4)

(Production standards)

POGREBAT'KO, Ye.; SOTNIKOVA, K.

Instruments for determining efficient systems of metal cutting
accepted at the all-union competition. *Bul. nauch. inform.: trud*
i zar. plata no. 6:44-51 '59. (MIRA 12:9)
(Metal cutting)

POGREBAT'KO, Ye.

Provide industry with new devices for the establishment of technical standards. Sots.trud. 4 no.12:89-92 D '59. (MIRA 13:6)

(Time study)

(Production standards)

(Measuring instruments)

POGREBAT'KO, Ye.

Results of the all-Union contest for the best work on the
methodology of technical standards and work norms. Biul.
nauch.inform: trud i zar.plata 3 no.2:41-45 '60.
(MIRA 13:6)
(Machinery industry--Production standards)

POGREBAT'KO, Ye.

Using photography for studying labor processes. Sots. trud 8
no. 5:83-87 My '63. (MIRA 16:6)

(Photography, Industrial)
(Time study)

RYSS, V.M.; POGREBAT'KO, Ye.A.

Instruments and devices used in establishing work norms. Mashinostroitel'
no.8:21-23 Ag '61. (MIRA 14:7)
(Production control—Equipment and supplies)

2882 Pogrebennyy, I. N.

Issledovaniye rabocheho protsessa radial'noosevoy gidroturbiny. Khar'kov,
1954. 12 s. 19 wm. (M-vo vyssh. obrazovaniya SSSR. Khar'k. polite'dm. in-t
im. V. I. Lenina). 100 Ekz. Bespl. - (54-55735)

POGREBENNY, I. N.

"Investigation of the Operating Process of a Radial Axial Hydroturbine."
Cand Tech Sci, Khar'kov Polytechnic Inst, Min Higher Education, Khar'kov, 1954.
(KL, No 2, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher
Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

POGREBENNYI, I.N., kandidat tekhnicheskikh nauk.

Study of the operation of a Francis turbine under optimum conditions.
Energomashinostroyeniye no.6:16-19 Jo '56. (MIRA 9:9)
(Hydraulic turbines)

Pogrebennyi, I.N.

POGREBENNYI, I.N., kand. tekhn. nauk.

Investigating the performance of Francis hydraulic turbines running
at varying speeds. Sbor. st. CHPI no. 10:24-30 '57. (MIRA 11:1)
(Hydraulic turbines)

L 50502-65 EWT(1)/EWP(m)/EPA(s)-2/EWT(m)/EWP(w)/EPF(n)-2/EWA(d)/EWP(v)/EPR/T-2/
EWP(k)/EPA(bb)-2 Pd-1/Pf-4/Ps-4/Pu-4 WH/EM
ACCESSION NR: AP5012097 UR/0147/65/000/002/0147/0151

AUTHOR: Pogrebenny, I. N., Tanskiy, A. M.

TITLE: Design of the leading edge and intake section of the blade of the working rotor of a centrifugal pump with arbitrary initial twisting of the liquid stream

SOURCE: IVUZ. Aviatzionnaya tekhnika, no. 2, 1965, 147-151

TOPIC TAGS: water turbine design, centrifugal pump, turbine blade design, pump rotor design, hydrodynamics

ABSTRACT: The article deals with the introduction of the three-dimensional theory of liquid motion into the design of pumprotors in connection with the transition from rotors with cylindrical blades to rotors with doubly-curved blades. An analysis is made of the method most commonly used at the present time for designing spatial blades, and it is shown that a serious defect of this method is the arbitrary selection of the skeletal profile line which is not related to the form of the axiosymmetrical surfaces of the current by any kinematic conditions. The approximate grapho-numerical method proposed by I. N. Voznesenskiy for finding the surface of a blade, based on the equations for the motion of a non-viscous liquid, is discussed (Voznesenskiy, I. N. Zhizn', deyatel'nost' i trudy v oblasti gidromashinostroyeniya i avtomaticheskogo regulirovaniya. M., Mashgiz, 1952). The author

Card 1/4

L 50502-65

ACCESSION NR: AP5012097

notes that an obstacle to the use of this method in the design of pump blades is the absence of a method for constructing the leading segment of the blade of a rotor working in a flow created by a screw conveyor. The liquid flow after the conveyor has a distribution of the circumferential component of absolute velocity G , which makes it impossible to select the vortex line $C_{ur} = \text{const.}$ as the leading (intake) edge of the working rotor, as Voznesenskiy's method requires. The object of the present article is the determination of the form of the leading edge and intake segment of a working rotor blade, when the flow of the liquid has been twisted in advance of the wheel in an arbitrary manner. This problem is broken down into two sub-problems: 1) determination of the form and position of the initial vortex line L_2 ; 2) determination of the form of the blade section between the leading edge L_1 and the vortex line L_2 (see Figure 1 of the Enclosure). The method developed by the author makes it possible to apply Voznesenskiy's theory to the problem of designing the working rotors of centrifugal pumps operating with screw conveyers and other devices which have the effect of twisting the flow as it enters the rotor. Orig. art. has: 3 figures and 12 formulas.

Cord 2/4

L 50502-65

ACCESSION NR: AP5012097

ASSOCIATION: None

SUBMITTED: 13Jun64

ENCL: 01

SUB CODE: ME, PR

NO REF SOV: 002

OTHER: 000

Card 3/4

L 50502-65

ACCESSION NR: AP5012097

0
ENCLOSURE: 01

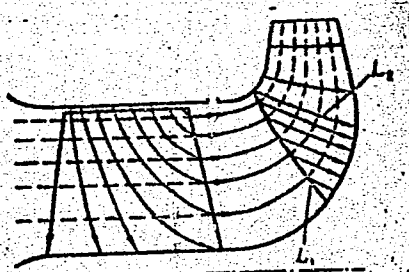


Figure 1. Vortex model of sequentially connected axial and centrifugal pump stages. The dotted lines indicate the current lines, the solid lines with arrows - the vortex lines. L_1 - leading edge of the blade of the centrifugal rotor; L_2 - initial vortex line.

JD
Card 4/4

L 58555-65 ENT(m)/ENP(w)/ENP(v)/T-2/ENP(k) Pf-4 EM

ACCESSION NR: AP5014149

UR/0143/65/000/005/0090/0092

621.601

22
B

AUTHOR: Pogrebennyi, I. N. (Candidate of technical sciences, Docent);
Tanskiy, A. M. (Engineer)

TITLE: Constructing the three-dimensional ²⁴blade of a centrifugal pump impeller

SOURCE: IVUZ. Energetika, no. 5, 1965, 90-92

TOPIC TAGS: centrifugal pump, pump impeller, pump blade

ABSTRACT: A method is suggested for calculating the coordinates of some points of a three-dimensional blade on the basis of the coordinates of a flow surface S and a line L lying in this surface. A procedure for calculating these coordinates is outlined for the case when S and L have been determined according to the I. N. Voznesenskiy method ("Life, etc.", Mashgiz, Moscow, 1952). The latter yields: (a) coordinates of some points on the line L which belongs with a definite surface R and (b) cosines of tangent vectors of eddy lines and flow lines which intersect at the above points. The analytical determination of the blade profile obviates complicated and laborious graphical methods proposed by L. A. Dreyfus (Stockholm, 1946) and A. Yu. Cotton (1958). Orig. art. has: 2 figures and 5 formulas.

Card 1/2

L 58555-65

ACCESSION NR: AP5014149

ASSOCIATION: Voronezhskiy politekhnicheskiy institut (Voronezh Polytechnic Institute) /

SUBMITTED: 14Jun64

ENCL: 00

SUB CODE: IE

NO REF SOV: 003

OTHER: 000

Card 2/2 *20P*

POGREBENNYI, I.N.; TANSKIY, A.M.

Designing the input edge and input area of the blade of a centrifugal pump wheel in case of an arbitrary initial twisting of the fluid flow. Izv. vys. ucheb. zav., av. tekhn. 8 no.2:147-151 '65.
(MIRA 18:5)

Pogrebenny, I.N.

P.3

25(2);10(4)

PHASE I BOOK EXPLOITATION SOV/3301

Chelyabinsk. Politekhnikheskiy institut

Raschet i konstruirovaniye mashin (Design and Construction of Machines) Moscow, Mashgiz, 1959. 78 p. (Series: Its: Sbornik statey, vyp. 13). 4,000 copies printed.

Sponsoring Agency: Ministerstvo vysshego obrazovaniya SSSR.

Reviewers: S.A. Bybin, Engineer; G.A. Mendeleyev, Engineer; G.E. Paley, Candidate of Technical Sciences; A.P. Trofimov, Engineer; Ye.M. Kharitonchik, Candidate of Technical Sciences; and Kh.I. Shvartsman, Engineer; Ed.: V.I. Sayapin, Candidate of Technical Sciences; Tech. Ed.: N.A. Dugina; Exec. Ed. (Ural-Sibirian Division, Mashgiz): T.M. Somova, Engineer.

PURPOSE: This book is intended for technical and scientific personnel in the field of the design and construction of machines.

COVERAGE: This is a collection of articles written by scientific personnel of the Chelyabinsk Polytechnical Institute. They

Card 1/4

SOV/3301

Design and Construction (Cont.)

deal with various problems in the design and construction of sub-assemblies and mechanisms of internal combustion engines, automotive transmissions, hydraulic and other machines. No personalities are mentioned. References accompany each article.

TABLE OF CONTENTS:

Foreword

3

Rumyantsev, S.A., Engineer. Problem of Increasing the Life of Splines

4

Investigations aimed at improving the wear resistance of splines with length/diameter ratio of 0.5 are described. It is shown that by means of nitriding and cyaniding and increasing the life of splines by 2.6-3 times, their wear amounts to only 0.04-0.05 mm and they are suitable for further use.

Stashkevich, A.P., Candidate of Technical Sciences. Problem of Designing Cams for the Mechanism for Valve Operation of Internal Combustion Engines

12

Card 2/4

Design and Construction (Cont.)

SOV/3301

Analysis of the effect of geometry of separate sections of cam profiles on the kinematics of the follower. Intake and exhaust cams with improved profiles were designed.

Pogrebenny, I.N., Candidate of Technical Sciences. Improving the L-18 Centrifugal Pump 26

Replacing the L-18 centrifugal-pump impeller by a new one, type B-5, resulted in an increase of efficiency of 26 percent and an annual saving of 30 thousand rubles.

Temnov, V.K., Candidate of Technical Sciences. Friction Factor in Unsteady Fluid Flow 45

An expression for the friction factor in unsteady flow in a pipe is derived.

Pogrebenny, I.N., Candidate of Technical Sciences. Cavitation Tests on a Model of a Francis-type Turbine in an Open System 48

Various methods of cavitation tests on a model of a Francis-type turbine with variable head were compared. It was established that it is most expedient to determine cavitation

Card 3/4

Design and Construction (Cont.)

SOV/3301

characteristics with a constant opening of the guide apparatus and a constant number of revolutions per minute. Under these conditions cavitation develops at a lower head than when other methods are used.

Vasin, G.G., Engineer. Some Problems of Kinematics and Dynamics of the "Impulsator" in an Automotive Inertia-type Stepless Torque Converter 57

The author presents kinematic and dynamic analysis of the "impulsator" mechanism of the new automotive inertia-type stepless torque-converter developed at the Chelyabinsk Polytechnical Institute under the direction of M.F. Balzhi.

Vasin, G.G., Engineer. Principles of Designing the "Impulsator" Mechanism of an Automotive Inertia-type Stepless Torque Converter 68

The author describes basic conditions which determine the selection of a method for designing the impulsator and determines basic relationships between impulsator parameters.

AVAILABLE: Library of Congress

VK/jo
4-29-60

Card 4/4

POGREBENNYI, I.N., kand.tekhn,nauk

Improving the L-18 centrifugal pump. Sbor.st,CHPI no.13:26-44
'59. (MIRA 13:4)

(Centrifugal pumps)

POGREBENNYI, I.N., kand.tekhn.nauk

Cavitation tests of the model of a Francis turbine in an open
unit. Shor.st.CHPI no.13:48-56 '59. (MIRA 13:4)
(Hydraulic turbines--Testing) (Cavitation)

POGREBENNYI, I.N., kand. tekhn. nauk, dotsent; TANSKIY, A.M., inzh.

Design of a solid spatial vane of the runner of a centrifugal pump. Izv. vys. ucheb. zav.; energ. 8 no.5:90-92 Ny '65. (MIRA 18:6)

1. Voronezhskiy politekhnicheskii institut. Predstavlena kafedroy tepolovyykh dvigateley.

POGREBENSKIY, G.M.

IVANOV, V.I., inzh.; KORSHUN, G.F., inzh.; ~~POGREBENSKIY, G.M., inzh.;~~
BEKKER, D.Z., inzh.; LADYZHENSKIY, V.P., inzh.

Machine used for simultaneous laying and plastering of brick blocks.
Rats. i sobr. predl. v stroi. no.2:28-33 '57. (MIRA 11:1)

1, Omskstroy Ministerstva stroitel'stva predpriyatiy neftyanoy
promyshlennosti.
(Building blocks) (Building machinery)

POGREBETSKAYA, M.N., inzh.

A method of surface transformation. Izv. vys. ucheb.
zav.; mashinostr. no.5:75-79 '65. (MIRA 18:11)

1. Noril'skiy vecherniy industrial'nyy institut.

POGREBETSKAYA, M.N., inzh.

Curvature of helical surfaces. Izv. vys. ucheb. zav.; mashinostr.
no.4:5-15 '65. (MIRA 18:5)

1. Noril'skiy vecherniy industrial'nyy institut.

7

C.A.

Hydrogen embrittlement of valve springs. S. S. Novyrev, T. M. Puzoshtskaya, and A. A. Yurgenson. *Vestnik Mashinostroyeniya* 31, No. 5, 53-4 (1951).—Inspection of broken Diesel valve springs showed characteristics of H-brittleness. To study this further, specimens of spring steel were hardened from 800° in oil at 70° and then Zn-plated for 5-120 min. in a bath contg. ZnO 40-50, NaOH 70-85, NaCN 70-85, Na₂S 0.5-5, and glycerol 5-8 g./l. Longer plating exposed the steel to longer action of H. This was confirmed by subsequent tests. H-brittleness appeared after 5-15-min. plating. Rinsing in hot H₂O, oven drying, and then annealing at 100-200° removed brittleness. Prolonged or repeated plating induced irreversible brittleness. M. Hosh

ZAGVAZDINA, Ye.V., inzh.; POGREBETSKAYA, T.M., inzh.; YURGENSON, A.A., kand.
tekhn. nauk, dotsent

Anticorrosion nitriding of cast turbine components. Energomashino-
stroenie 10 no.8:32-36 Ag '64. (MIRA 17:11)

L 15265-65 EWT(m)/EWA(d)/EWP(t)/EWP(b) ASD(m)-3 MJW/JD/WB
 S/0114/64/000/008/0032/0036
 ACCESSION NR: AP5001434

AUTHOR: Zagvazdina, Ye. V. (Engineer); Pogrebetskaya, T. M. (Engineer);
 Yurgenson, A. A. (Candidate of technical sciences, Docent)

TITLE: Anticorrosive gas nitriding of cast turbine parts

SOURCE: Energomashinostroyeniye, no. 8, 1964, 32-36

TOPIC TAGS: turbine component, carbon steel, iron, nitridation, corrosion resistance,
 corrosion resistant steel/25L steel, SCh21-40 cast iron, SCh28-48 cast iron

Abstract: Data are given on the increase in weight, phase composition, structure, and corrosion resistance of specimens of 25L steel and cast irons SCh21-40 and SCh28-48 following various modes of anticorrosive [gas] nitriding and exposure in the condensate and steam.

It was found that nitriding considerably increases the corrosion resistance of cast carbon steel and cast irons.

A two-stage process was found to be more efficient, since it provides better properties of the hardened layer after anticorrosive nitriding than in the case of isothermal modes.

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L 15265-65

ACCESSION NR: AP5001434

A good combination of corrosion-resistant and ductile properties was displayed by a layer obtained in the nitriding of 25L steel by the following mode:
530°C - 4 hr., 500°C - 10 hr.

Prior to anticorrosive nitriding, the parts should have a surface finish no less than class $\nabla 7$.

The nitriding of cast irons is promising, since it is associated with an appreciable increase in hardness. Saturation of cast iron Sch21-40 with nitrogen is higher than that of Sch28-48 or 25L steel.

The presence of cavities on the surface of cast steel and iron parts is not allowed, since it lowers the quality of the nitrided layer. Orig. art. has 3 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00

NO REF SOV: 005

Card 2/2

ENCL: 00

OTHER: 000

SUB CODE: MM, PR

JPRS

BELENKOVA, M.M.; MIKHEYEV, M.N.; POGREBETSKAYA, T.M.; YURGENSON, A.A.

Magnetic properties of 1Kh18N9 steel following heat treatment
and nitriding. Fiz. met. i metalloved. 13 no.4:622-625 Ap
'62. (MIRA 16:5)

1. Institut fiziki metallov AN SSSR i Ural'skiy turbomotornyy
zavod.

(Chromium-nickel steel—Magnetic properties)

S/810/62/000/000/010/013

AUTHORS: Pogrebetskaya, T.M., Yurgenson, A.A., Kostenko, A.V.

TITLE: High-temperature behavior of nitrided steels.

SOURCE: Metallovedeniye i termicheskaya obrabotka; materialy konferentsii po metallovedeniyu i termicheskoy obrabotke, post. v g. Odessa v 1960 g. Moscow, Metallurgizdat, 1962, 245-257.

TEXT: The paper describes an experimental investigation showing that long-term exposure to high temperatures (T) of nitrided steels leads to the following phenomena: (1) Coagulation of the nitrides and dissociation of the less stable Fe nitrides, with attendant reduction in hardness; (2) diffusion in depth of the N, freed as a result of the nitride dissociation and, therefore, a thickening of the nitrided layer affected; (3) interaction with O, which evokes the formation of a surficial oxide layer. The nitride-dissociation T determines the T limits for the use of nitrided steels. Steels containing greater amounts of elements that form stable and finely-dispersed nitrides conserve their hardness and the thickness of the nitrided layer more effectively. Nitrided steels intended for long-term operation at elevated T must retain a sufficiently great surface hardness, be free of nitride networks and, for austenitic steels, have a minimal quantity of α -phase.

Card 1/3

High-temperature behavior of nitrided steels.

S/8/10/62/000/000/010/013

Specimens of the steels 15X11MΦ (15Kh11MF) and 15X12BMΦ (15Kh12VMF), which are ordinarily employed for nitrided parts of steam turbines operating at T of 535-570°C, and also steels 1X13 (1Kh13), 3M728 (EI728), and 1X18H9T (1Kh18N9T) were tested. The heat-treatment procedures employed are tabulated. Test T were 535, 560, and 570° for the first two steels and 680° for steel 1Kh18N9T. Maximal holding time: 6,000 hrs. Additional tests were made on the nitrided layer on valve stems made of steel 15Kh11MF, which had been in actual operation for 8,500 hrs. The change in hardness with time is graphed, also the depthwise distribution of the microhardness and the thickness of the nitrided layers as a function of the duration of the holding at the various high T's. The structure and the formation of the surface oxide layer are depicted in photos; they are substantiated by X-ray-diffraction analysis (full-page table). The oxidation process may be regarded as follows: The Cr oxidizes faster than the Fe in the surface layer, forming an oxide $(Cr, Fe)_2O_3$. Further oxidation is determined by the diffusion of the Fe and possibly the O through the layer of alloyed scale, whereupon a surface-scale layer consisting of Fe_2O_3 forms. The Fe nitrides in the nitrided layer dissociate, the N separated interacts with the Cr, forming Cr nitrides. Simultaneously, a gradual decomposition of the austenite in the nitrided layer proceeds. After 309 hrs there may still remain some γ-phase, but after 4,500 hrs the γ-phase lines on the X-ray graph disappears, and the structure

Card 2/3

High-temperature behavior of nitrided steels.

S/810/62/000/000/010/013

consists of (α + CrN) phase, the lines of which become increasingly distinct.
There are 10 figures and 2 tables; no references.

ASSOCIATION: Sverdlovskiy turbomotornyy zavod (Sverdlovsk turbo-engine plant).

Card 3/3

POGREBETSKAYA, T. M.

In their article, "On the Reduction of the Brittleness of Nitrided Layers of 38KhMYuA Steel," Engineers A. A. Yurgenson and T. M. Pogrebetskaya, of the Sverdlov Turbomotor Plant, present the procedures and results of a study of the optimal conditions of heat treatment recommended by N. A. Fertik in Metallovedeniye i Obrabotka Metallov, No 1, 1955, and Zavodskaya Laboratoriya, No 2, 1955 for brittleness reduction of nitrided steel layers. The experiments were carried out at the Sverdlov Turbomotor Plant.

Preliminary heat treatment of pipe billets of 38KhMYuA steel consisted of quenching at $920^{\circ} \pm 10^{\circ}\text{C}$ with cooling in water and followed by tempering at $630^{\circ} - 640^{\circ}\text{C}$ with cooling in air.

Sleeves of a block were nitrided as follows:

Heat up to $510^{\circ} \pm 5^{\circ}\text{C}$;

Soak at $510^{\circ} \pm 5^{\circ}\text{C}$ and with a degree of dissociation of ammonia of not more than 35% in the course of 18 hours;

Heat up to $540^{\circ} \pm 5^{\circ}\text{C}$;

Soak at $510^{\circ} \pm 5^{\circ}\text{C}$ and with a degree of dissociation of ammonia of not more than 65% in the course of 38-45 hours;

Cool down to 250°C under a current of ammonia or of waste (exhaust) gas.

54M.1374

POGREBETSKAYA, T. M.

The authors report the following results: Preliminary heat treatment influences the brittleness of a nitrided layer to a considerable degree; in the nature of a preliminary heat treatment of the 38KhMYuA steel, quenching at 930°C in water was recommended as this guarantees higher mechanical properties than quenching in oil and less brittleness of the nitrided layer, and, in addition, the saving of considerable quantities of oil. The sharp decline of the brittleness of the nitrided layer of the sample quenched at temperatures over 1,000°C was explained by the growth of the grain of steel and by the formation of a nitride network. (Metallovedeniye i Obrabotka Metallov, No 4, Apr 57, pp 41-44) (U)

5-11-137

~~POGREBETSKAYA, T.M.~~
AUTHOR: Turgenson, A.A., Engineer, and Pogrebetskaya, T.M.,
Engineer. 129-4-8/17

TITLE: On reducing the brittleness of the nitrided layer of
the steel 38XMMa. (O ponizhenii khrupkosti azotirov-
annogo sloya stali 38KhMYuA)

PERIODICAL: "Metallovedenie i Obrabotka Metallov" (Metallurgy and Metal
Treatment) 1957, No. 4, pp. 41 - 44 (U.S.S.R.)

ABSTRACT: The preliminary heat treatment influences to a consid-
erable extent the brittle strength of nitrided steel. On
the basis of experiments, which are described in some
detail, the authors recommend hardening from 930 °C in
water since they found that such treatment ensures better
mechanical properties than hardening in oil, the brittle-
ness of the nitrided layer is reduced and considerable
savings are made in the quantity of required oil. A
sharp decrease of the brittle strength of nitrided layers
of specimens hardened from temperatures above 1 000 °C is
attributed to growth of the steel grain and formation of
a nitride lattice. The investigations related to cylin-
der liners, the material of which contained 0.39% C,
1.45% Cr, 0.60% Al and 0.14% Mo. 25 x 30 mm specimens

Card 1/2

POGREBETSKAYA, T.M.

BOBACHEV, I.N., doktor tekhnicheskikh nauk, professor; GITEL'ZON, Ya.M..
inzhener; POGREBETSKAYA, T.M., inzhener; YURGENSON, A.A., inzhener.

Investigating the cavitation and erosion resistance of the 38KhMUA
zinc coated and nitrided steel. Vest.mash. 37 no.9; 24-26 S '57.
(MLRA 10:9)

(Steel--Testing)

GITEL'ZON, Ya.M., inzh.; ~~POGREBETSKAYA, T.M., inzh.~~; YURGENSON, A.A., dots.

Nitrogenizing EI723 and 15Kh11MF steels for operation at elevated
temperatures. Energomashinostroenie 4 no.7:32-35 J1 '58.
(Case hardening) (MIRA 11:10)

87947
S/114/60/000/006/006/008
E193/E383

18 1150
AUTHORS: Kostenko, A.V., ~~Pogrebetskaya, T.M.~~, Engineers
and Yurgenson, A.A., Docent
TITLE: Study of Nitrided Steels 15X11MΦ (15Kh11MF) and
15X12VMΦ (15Kh12VMF) After Prolonged Holding
at 570°C
PERIODICAL: Energomashinostroyeniye, 1960, No. 6,
pp. 33 - 36
TEXT: Owing to the necessity of using nitrided heat-
resistant steels in turbines operating under conditions of
high steam pressures and temperatures, need has arisen to
determine the effect of time and temperature on the properties
of the nitrided layers; hence the investigation described in
the present paper. The composition (in wt.%) of the steels
used in the experiments was as follows:
steel 15Kh11MF - 0.15% C, 0.50% Si, 0.32% Mn, 10.62% Cr,
0.25% Ni, 0.70% Mo, 0.35% V, 0.015% S and 0.02% P;
steel 15Kh12VMF - 0.13% C, 0.26% Si, 0.66% Mn, 12.0% Cr,
0.45% Ni, 0.80% W, 0.59% Mo, 0.20% V, 0.012% S and 0.02% P.
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89947

S/114/60/000/006/006/008
E193/E383

Study of Nitrided Steels 15Kh11MF and 15Kh12VMF After
Prolonged Holding at 570 °C

The experimental test pieces were heat-treated (air-hardening from 1 050 °C plus tempering at 740 °C in the case of steel 15Kh11MF and oil-quenching from 1 000 °C plus tempering at 700 °C in the case of steel 15Kh12VMF), machined to 10 x 10 x 30 mm in size, electrolytically degreased, pickled, phosphated and then subjected to the nitriding treatment, which consisted of 20 hours at 530 °C, followed by 20 hours at 580 °C, the degree of dissociation of ammonia being 35% at the lower and 65% at the higher temperature. The Rockwell hardness of the surface of the nitrided specimens was the same for both steels and amounted to 91 HRN; the nitrided layer of steel 15Kh11MF was slightly thicker (0.37 mm) than that of the steel 15Kh12VMF (0.32 mm). The nitrided test pieces were then held at 570 °C for 6 000 hours and during this period the microhardness across the nitrided layer and its thickness were measured at regular intervals, and the

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S/114/60/000/006/006/008
E193/E383

Study of Nitrided Steels 15Kh11MF and 15Kh12VMF After
Prolonged Holding at 570 °C

microstructure of the nitrided layers was examined. Some
of the typical results are reproduced in Fig. 1, where the
hardness (kg/mm^2) is plotted against the distance (mm) from
the surface of the nitrided layer on steels 15Kh11MF (graph a)
and 15Kh12VMF (graph b); experimental points marked by dots,
crosses and circles relate to measurements taken immediately
after nitriding, after 3 500 hours at 570 °C, and after
5 000 hours at 570 °C, respectively. Another set of results
is given in Table 3:

X

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S/114/60/000/006/006/008
E193/E383

Study of Nitrided Steels 15Kh11MF and 15Kh12VMF After
Prolonged Holding at 570 °C

Time (hrs)
at 570 °C

Depth (mm) of the nitrided layer (determined by
microhardness measurements) on steel

	15Kh11MF	15Kh12VMF
0	0.37	0.37
250	0.50	0.45
1500	0.55	0.50
3500	0.55	0.50
5000	0.60	0.60 .

Metallographical examination of the test pieces showed that
the nitrided layer consisted of two (main and intermediate)
sub-layers, the intermediate sub-layer in steel 15Kh11MF
being more sharply defined than that in the other steel. The

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S/114/60/000/006/006/008
E193/E383

Study of Nitrided Steels 15Kh11MF and 15Kh12VMF After
Prolonged Holding at 570 °C

increase in the thickness of the nitrided layer after holding at 570 °C was caused mainly by an increase in the thickness of the intermediate sub-layer, this increase being smaller in steel 15Kh12VMF. After holding at 570 °C, a light-grey film was formed on the surface of specimens of both steels. X-ray diffraction analysis showed that the film constituted a scale consisting of Fe_2O_3 , Fe_3O_4 and $\text{FeO} \cdot \text{Cr}_2\text{O}_3$.

Of the two steels studied, the rate of scale formation was faster on steel 15Kh11MF. After prolonged holding at 570 °C nitrides were precipitated at the grain boundaries and the upper, nitrogen-rich part of the nitrided layer; at a later stage, these nitride precipitates became surrounded by an oxide layer. This effect is illustrated in Fig. 4, showing microphotographs (X340) of the nitrided layer in steel 15Kh11MF after: a) 250; b) 3 000 and c) 4 000 hours at 570 °C. According to the

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S/114/60/000/006/006/008
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Study of Nitrided Steels 15Kh11MF and 15Kh12VMF After
Prolonged Holding at 570 °C

present authors, the preferential oxidation of the nitrided layers along the grain boundaries is associated with the precipitation of nitrides which form a nitride-metal cell, thus creating conditions favourable for oxidation. Analysis of the results obtained led the present authors to the following conclusions.

- 1) A nitrided layer, formed on the more heat-resistant steel 15Kh12VMF, is more stable at higher temperatures than that formed on steel 15Kh11MF. The former steel can be recommended as the material for nitrided components operating at 570 °C.
- 2) In order to increase the resistance of nitrided layers against oxidation during service at elevated temperatures, the nitriding process should be carried out in such a manner as to prevent the formation of a nitride network.

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Study of Nitrided Steels 15Kh11MF and 15Kh12VMF After
Prolonged Holding at 570 °C

3) The result of work conducted at the Turbomotornyy zavod (Turbomotor Plant) has shown that the optimum properties of the nitrided layer (thickness of the layer 0.2 - 0.4 mm, hardness not less than 89 HRN) formed on high chromium-content steels are obtained if the nitriding process consists of 12 hours at 530 °C, followed by 18 hours at 580 °C, the degree of dissociation of ammonia being 35% at the lower and 65% at the higher temperature. There are 6 figures, 3 tables and 5 Soviet references.

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POGREBETSKAYA, T. M.

81824

S/129/60/000/07/010/013
E193/E235

18.1130
18.9520

AUTHORS: Kostenko, A. V., Lopukhina, Ye. V., Pogrebetskaya, T. M.,
and Yurgenson, A. A., Engineers

TITLE: Structure of Nitrided Steel 15Kh11MF After Prolonged
Service at Elevated Temperatures

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,
1960, No. 7, pp. 48-52

TEXT: Following their earlier findings (Ref. 1 to 3) that hardness of nitrided stainless and austenitic steels decreased after prolonged service at high temperatures, the present authors carried out a systematic study of this effect on nitrided specimens of steel 15Kh11MF which is frequently used as the material of some parts of steam turbines, operating at approximately 570°C. The test pieces, normalised at 1050°C and tempered at 740°C, were electrolytically degreased, pickled, phosphated and then nitrided by a two-stage process (20 h at 530°C followed by 20 h at 500°C, the degree of dissociation of ammonia being 35 and 65% respectively) which produced a nitrided layer 0.37 mm thick, with hardness HRN equal 95. The structure of the nitrided layer and the effect of prolonged

Card 1/3

POGREBETSKAYA, T.M.

AUTHORS

Belenkov, M.M.	Kostenko, A.V.	Mikheyev, M.N.
Stolunskaya, E.E.	Podobetskaya, T.M.	Yurkanson, A.A.
Engelner.		

Treatment and Nitriding on the

8/129/60/000/011/004/016
B073/E535

TITLE:

TITLE: Mechanical Properties of Aluminum
Author: Metallovedeniye i termicheskiye obrabotka metallov
PERIODICAL: Metallovedeniye i termicheskiye obrabotka metallov
1960, No. 11, pp. 16-20
... steel can be ferro-

1960, Soviet scientists have found that a mixed layer of austenitic steel can be performed by heating, although the core heat treatment it is possible to obtain by changing the preliminary degrees of alloying and various phase compositions of the secondary phase. Changes in austenitic steel composition during preliminary heat treatment of austenite for may bring about a change from quenching at different temperatures, for example, the authors considered it of interest to study the influence of preliminary heat treatment and nitriding on the mechanical properties of austenitic steel. Two steels of the mechanical compositions were investigated: (in %)

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Card 1/5

	C	Si	Mn	Cr	Ni	V	Ti	S	P
Steel	0.17	0.01	0.78	0.84	0.007	0.016			

0.64 0.015 0.020

	IXI8HQT	(XED18H9T)
	0.10	0.58
	0.53	17.10

The magnetic properties were studied after the preliminary heat treatment at 1000°C. The 1800°C treatment was additionally carried out in the case of the 1800°C specimen. The specimens were then cooled following the required treatment in the furnace at different rates, and the "wrong" magnetic states of the studied specimens were changed and the magnetic properties were determined. The magnetic properties were also simultaneously studied of the steel samples after the steel samples were annealed at 1150 and 1200°C. The magnetic annealing of the steel samples at 1150 and 1200°C and the normalizing treatment of the steel samples at 1200°C consisted in the heating of the steel samples to the required temperature and subsequent cooling. Both steel samples were cooled at the same rate.

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in the form of
specimens were prepared for 8 hours at 800°C. The specimens were 13 mm in diameter, 5 mm in height. The permanent magnetic state was maintained by placing the specimens in a magnetic field strength of 100 Oe. The specimens were then ground and polished to a mirror finish. The specimens were then measured by means of a magnetic scale at various field strengths of 0, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300, 2400, 2500, 2600, 2700, 2800, 2900, 3000, 3100, 3200, 3300, 3400, 3500, 3600, 3700, 3800, 3900, 4000, 4100, 4200, 4300, 4400, 4500, 4600, 4700, 4800, 4900, 5000, 5100, 5200, 5300, 5400, 5500, 5600, 5700, 5800, 5900, 6000, 6100, 6200, 6300, 6400, 6500, 6600, 6700, 6800, 6900, 7000, 7100, 7200, 7300, 7400, 7500, 7600, 7700, 7800, 7900, 8000, 8100, 8200, 8300, 8400, 8500, 8600, 8700, 8800, 8900, 9000, 9100, 9200, 9300, 9400, 9500, 9600, 9700, 9800, 9900, 10000, 10100, 10200, 10300, 10400, 10500, 10600, 10700, 10800, 10900, 11000, 11100, 11200, 11300, 11400, 11500, 11600, 11700, 11800, 11900, 12000, 12100, 12200, 12300, 12400, 12500, 12600, 12700, 12800, 12900, 13000, 13100, 13200, 13300, 13400, 13500, 13600, 13700, 13800, 13900, 14000, 14100, 14200, 14300, 14400, 14500, 14600, 14700, 14800, 14900, 15000, 15100, 15200, 15300, 15400, 15500, 15600, 15700, 15800, 15900, 16000, 16100, 16200, 16300, 16400, 16500, 16600, 16700, 16800, 16900, 17000, 17100, 17200, 17300, 17400, 17500, 17600, 17700, 17800, 17900, 18000, 18100, 18200, 18300, 18400, 18500, 18600, 18700, 18800, 18900, 19000, 19100, 19200, 19300, 19400, 19500, 19600, 19700, 19800, 19900, 20000, 20100, 20200, 20300, 20400, 20500, 20600, 20700, 20800, 20900, 21000, 21100, 21200, 21300, 21400, 21500, 21600, 21700, 21800, 21900, 22000, 22100, 22200, 22300, 22400, 22500, 22600, 22700, 22800, 22900, 23000, 23100, 23200, 23300, 23400, 23500, 23600, 23700, 23800, 23900, 24000, 24100, 24200, 24300, 24400, 24500, 24600, 24700, 24800, 24900, 25000, 25100, 25200, 25300, 25400, 25500, 25600, 25700, 25800, 25900, 26000, 26100, 26200, 26300, 26400, 26500, 26600, 26700, 26800, 26900, 27000, 27100, 27200, 27300, 27400, 27500, 27600, 27700, 27800, 27900, 28000, 28100, 28200, 28300, 28400, 28500, 28600, 28700, 28800, 28900, 29000, 29100, 29200, 29300, 29400, 29500, 29600, 29700, 29800, 29900, 30000, 30100, 30200, 30300, 30400, 30500, 30600, 30700, 30800, 30900, 31000, 31100, 31200, 31300, 31400, 31500, 31600, 31700, 31800, 31900, 32000, 32100, 32200, 32300, 32400, 32500, 32600, 32700, 32800, 32900, 33000, 33100, 33200, 33300, 33400, 33500, 33600, 33700, 33800, 33900, 34000, 34100, 34200, 34300, 34400, 34500, 34600, 34700, 34800, 34900, 35000, 35100, 35200, 35300, 35400, 35500, 35600, 35700, 35800, 35900, 36000, 36100, 36200, 36300, 36400, 36500, 36600, 36700, 36800, 36900, 37000, 37100, 37200, 37300, 37400, 37500, 37600, 37700, 37800, 37900, 38000, 38100, 38200, 38300, 38400, 38500, 38600, 38700, 38800, 38900, 39000, 39100, 39200, 39300, 39400, 39500, 39600, 39700, 39800, 39900, 40000, 40100, 40200, 40300, 40400, 40500, 40600, 40700, 40800, 40900, 41000, 41100, 41200, 41300, 41400, 41500, 41600, 41700, 41800, 41900, 42000, 42100, 42200, 42300, 42400, 42500, 42600, 42700, 42800, 42900, 43000, 43100, 43200, 43300, 43400, 43500, 43600, 43700, 43800, 43900, 44000, 44100, 44200, 44300, 44400, 44500, 44600, 44700, 44800, 44900, 45000, 45100, 45200, 45300, 45400, 45500, 45600, 45700, 45800, 45900, 46000, 46100, 46200, 46300, 46400, 46500, 46600, 46700, 46800, 46900, 47000, 47100, 47200, 47300, 47400, 47500, 47600, 47700, 47800, 47900, 48000, 48100, 48200, 48300, 48400, 48500, 48600, 48700, 48800, 48900, 49000, 49100, 49200, 49300, 49400, 49500, 49600, 49700, 49800, 49900, 50000, 50100, 50200, 50300, 50400, 50500, 50600, 50700, 50800, 50900, 51000, 51100, 51200, 51300, 51400, 51500, 51600, 51700, 51800, 51900, 52000, 52100, 52200, 52300, 52400, 52500, 52600, 52700, 52800, 52900, 53000, 53100, 53200, 53300, 53400, 53500, 53600, 53700, 53800, 53900, 54000, 54100, 54200, 54300, 54400, 54500, 54600, 54700, 54800, 54900, 55000, 55100, 55200, 55300, 55400, 55500, 55600, 55700, 55800, 55900, 56000, 56100, 56200, 56300, 56400, 56500, 56600, 56700, 56800, 56900, 57000, 57100, 57200, 57300, 57400, 57500, 57600, 57700, 57800, 57900, 58000, 58100, 58200, 58300, 58400, 58500, 58600

Card 3/4

Influence of Heat Treatment and Nitriding on the Mechanical Properties of Austenitic Steels
 8/129/60/000/011/001/016
 8073/8335

1) Changing of the normalization annealing temperature of the steel E113 from 1070 to 1150°C and additional aging for 8 hours at 800°C does not bring about a change in the susceptibility of this steel.
 2) Nitriding changes to a considerable extent the magnetic permeability of the investigated steels; the nitrided layers of both the formation investigated steel were ferromagnetic and this is due to the formation of nitrides, impoverishment in alloying elements of the austenite and austenite decomposition.
 3) As a result of nitriding, the magnetic permeability of the steel E113 increases considerably, (by a factor of 3) as compared to the steel E113 before nitriding.
 4) Increase in the depth of nitriding brings about an increase of the maximum magnetic permeability with increasing relative depth of the nitrided layer of the steel E113 from 25 to 48.5% the maximum permeability increases by more than double. With increasing relative depth of the nitrided layer of the steel E113 from 50 to 95.65%, its maximum permeability increases from 5.7 to 19.8 Gauss/Oe.
 Card 4/5

Influence of Heat Treatment and Nitriding on the Mechanical Properties of Austenitic Steels
 5). The results of the described investigations lead to the conclusion that it is possible to monitor the depth of the nitrided layer for a number of austenitic steels by means of an electromagnetic method. There are 1 figure, 5 tables and 5 references in all Soviet.

Card 5/5

18.7400

80885
S/126/60/009/06/040/025
E111/E352
Pogrebetskaya, T.M.

AUTHORS: Kostenko, A.V., Lopukhina, Ye.V.,
and Yurgenson, A.A.

TITLE: Peculiarities in the Behaviour of Nitrided Type 1Kh18N9T
Steel During Prolonged Residence at a High Temperature

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 6,
pp 868 - 877 (USSR)

ABSTRACT: The authors point out that the nitriding of austenitic
steels has not been used in gas-turbine construction
(Ref 2) because of process and finishing difficulties
and the insufficient high-temperature stability of the
nitrided layer (Refs 3,4). A previous study by the authors
of a group of nitrided steels (Ref 5) showed the superiority
of type 1Kh18N9T steel in these respects and the present
investigation aimed at a more detailed study. Specimens
of the steel (0.10% C, 17.80% Cr, 9.7% Ni, 0.64% Ti,
0.012% S, 0.020% P, 0.53% Mn, 0.58% Si) were hardened
from 1 150 °C, aged for 8 hours at 300 °C, pickled in
hydrochloric acid and nitrided at 600 °C for 75 hours.
A 0.29 mm deep nitrided layer with a hardness $H_R = 92$
was obtained. The kinetics of reaction-diffusion of

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S/126/60/009/06/010/025

E111/E352

Peculiarities in the Behaviour of Nitrided Type 1Kh18N9T Steel
During Prolonged Residence at a High Temperature

nitrogen and changes in the nitrided layer during prolonged holding at 680 °C in furnaces of a type IP-2 machine (as described in Ref 6) were investigated. For studying phases at increasing depth below the surface of the nitrided and scale-layer X-ray structural analyses of successive layers were carried out at the Ural'skiy gosuniversitet (Ural State University) in consultation with V.N. Konev. Figure 1 shows the structure of the nitrided layer before and after holding for 3 000 hours at 680 °C, while the oxides on an etched polished section after 250 hours is shown in Figure 2. The linear relations between the square of the gain in weight (g/mm^2) (Curve 1) and the square of the depth (mm) of the nitrided layer on the one hand and the duration of nitriding (hours) on the other given in Figure 3 indicates a parabolic law for nitrogen diffusion. The X-ray patterns from successive layers before and after holding at 680 °C for 4 500 hours are shown in Figures 4 and 5, respectively, the nature of

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Peculiarities in the Behaviour of Nitrided Type 1Kh18N9T Steel
During Prolonged Residence at a High Temperature

the phases being listed in Tables 1 and 2, respectively. The surface hardness of the nitrided steel is plotted against duration of holding (hours) at 680 °C in Figure 6, the corresponding effect on the depth of the nitrided layer being shown in Figure 7 (Curves 1, 2 and 3 refer to the whole, base, and transition layers, respectively). Figure 8 shows hardness as a function of depth below surface before and after holding for 5 000 hours (Curves 1 and 2, respectively). The work showed that saturation of the steel with nitrogen leads to austenite decomposition; the nitrogen is fixed as a nitride with the CrN structure. Prolonged holding at 680 °C gave an outer scale layer of ferric oxide and an inner layer of $(\text{Cr,Fe})_2\text{O}_3$; iron nitrides dissociate; inside the nitrided layer complete austenite decomposition occurs, with equalization of nitrogen concentration with depth and formation and coagulation of nitrides. The authors recommend that nitriding conditions should be selected to give the greatest quality of stable nitrides (not iron nitrides) mechanically

Card3/4

37705

5/126/62/013/004/019/022
E073/E135

18.7500

AUTHORS: Belenkova, M.M., Mikheyev, M.N.,
Pogrebetskaya, T.M., and Yurgenson, A.A.

TITLE: Magnetic properties of the steel 1X18H9 (1Kh18N9)
after heat-treatment and nitriding

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.4, 1962,
622-625

TEXT: The authors and their team found earlier that the greater the content of elements forming stable nitrides, the more will the austenite become impoverished of alloying elements during nitriding and the more intensive will be its decomposition and the rejection of the α -phase. The influence of nitriding on the magnetic properties of steel similar to the previously tested 1X18H9T (1Kh18N9T) steel but not containing titanium was studied to verify this conclusion. The compositions of the two steels studied were:

1Kh18N9: 0.14% C; 0.66% Si; 0.85% Mn; 17.68% Cr; 9.02% Ni,
0.07% Ti; 0.016% S; 0.016% P.

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Magnetic properties of the steel... S/126/62/013/G04/019/022
E073/E135

1Kh18N9T: 0.1% C; 0.58% Si; 0.53% Mn; 17.78% Cr; 8.70% Ni;
0.64% Ti; 0.013% S; 0.02% P.

The magnetic properties were determined after heat-treatment (quenching from 1150 °C in water, followed by ageing for 8 hours at 800 °C). Both steels were paramagnetic in the quenched state and their susceptibility values were nearly the same. After ageing the susceptibility increased somewhat, the permeability of both steels after quenching and ageing approached unity and did not depend on the field strength. In the nitrided state the maximum permeability of the steel without Ti was considerably lower than in the steel with Ti. For a relative depth of the nitrided layer of 57.4% the steel 1Kh18N9 had a maximum permeability of 1.8 gauss/Oe, whilst for the steel 1Kh18N9T the maximum permeability was 3.7 gauss/Oe for a relative depth of the nitrided layer of 50%. The structures of the nitrided layers of both steels were identical, consisting of austenite and carbide grains in the heat-treated state; the structure of the nitrided layer was reminiscent of sorbite, due to the partial decomposition of the α -phase and the carbides during

Card 2/4

Magnetic properties of the steel.. S/126/62/013/004/019/022
E073/E135

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals, AS USSR)
Ural'skiy turbomotornyy zavod
(Ural Turboengines Works)

SUBMITTED: August 26, 1961

Card 4/4

POGREBETSKAYA, V.A.; NOVOSPASSKIY, V.V., red.; RAKOV, S.I., tekhn.red.

[From Kiev to Odessa] Ot Kieva do Odessy. [Moskva, Izd-vo VTsSPS
Profizdat, 1958] 1 v. unpagged (MIRA 12:2)
(Dnieper Valley--Description and travel)

13

CA PLASTIC MASSES. G.S. Petrov and E.A. Pogrebetaki. Russ.
47,816, July 31, 1936. Inorg. or org. fillers are impregnated
with alc. or ag. solns. of dimethylurea and NH_4 salts of fatty
acids and the product is dried and pressed in the usual manner.

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